



Review Article

AN EVIDENCE BASED REVIEW ON THE ROLE OF AYURVED IN GERIATRIC CARE

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ABSTRACT

Ageing is a constant, irreversible, unstoppable and natural physiological process. It is considered to be the most crucial time period of life as the physical strength in this period declines gradually. Many physical and psychological problems start surfacing, and dependency on others increases. Due to increased incidences of such problems in elderly, there is a need of time to understand the importance of geriatrics globally. That's why geriatrics is now a very speedily emerging branch of research in the present era. Ayurved, having a holistic approach towards health, has a great potential to do prevention of ageing process and related diseases. Ayurved, the science of life has a separate branch named *Jara* or *Rasayan* to deal with the diseases of old people and to delay the ageing process. Ayurved also suggests lifestyle measures, dietetics, *Panchkarma* therapies, *Yoga* along with *Rasayan* to delay the process of ageing and to improve the quality of life of geriatric group of people. That is why there is a need of large scale research in this field to prepare a complete holistic approach evidence based treatment protocol for geriatric people. Thus, the topic is chosen to review the concept of ageing based on both Ayurvedic and modern concept, problems of the old age people, complete comprehensive assessment of old people, old researches on geriatrics and clinical realities which makes geriatric research difficult. This review will help to initiate future Ayurved based research protocol.

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INTRODUCTION

Ayurved is the science of "Ayu" that means life. Journey of life starts from birth till death. The graph of human body's strength ascends in the childhood till middle age, remains constant for few years and then starts declining. Ageing is a constant, irreversible and unstoppable process. Ageing involves two opposite type of changes, evolution or growth and involution or atrophy. Both go on concurrently throughout life but atrophy predominates in old age^[1]. Ageing is a natural process. In the words of Seneca; "Old age is an incurable disease", but more recently, Sir James Sterling Ross commented: "You do not heal old age. You protect it; you promote it; you extend it"^[2]. As the graph of body's strength declines in old age, it is associated with lot of physical, psychological, social problems. The prevalence of diseases increase with the increase in age. In the year 2002, there were an

estimated 605 million old persons in the world, of which 400 million were living in low-income countries. Italy and Japan have the highest proportion of older persons (about 16.7 percent and 16 percent respectively in the year 2003). By 2025, the number of elderly people is expected to rise more than 1.2 billion with about 840 million of these in low-income countries. In India, although the percentage of aged persons to the total population is low in comparison to the developed countries, nevertheless, the absolute size of aged population is considerable. For the year 2010 the estimates were 8 percent of total population who were above the age of 60 years, and is likely to rise to 19% by 2050^[3].

The ratio of the problems in old age people has increased in the last few decades and thus it is the need of hour to provide special attention to the

old age group. That is why Geriatric is considered as major medical speciality globally.

Pathophysiology of Ageing: Ageing can be defined as a progressive accumulation through life of random molecular defects that build up within tissues and cells. Eventually, despite multiple repair and maintenance mechanisms, these result in age-related functional impairment of tissues and organs^[4].

Theories of Ageing: A major contribution to random molecular damage is made by reactive oxygen species produced during the metabolism of oxygen to produce cellular energy. They cause oxidative damage at a number of sites:

- Nuclear Chromosomal DNA, causing mutations and deletions which ultimately lead to reduced gene function.
- Telomers, which are the protective end regions of chromosomes which shorten with each cell division. When telomers are sufficiently eroded, cells stop dividing. It has been suggested that telomers represent a “biological clock” which prevents uncontrolled cell division and cancer.
- Mitochondrial DNA resulting in reduced cellular energy production and ultimately cell death.
- Proteins: for example, those increasing formation of advanced glycosylation end-products from spontaneous reaction between protein and local sugar molecules. These damage the structure and function of affected protein, which becomes resistant to breakdown. This is the cause of yellowing of ageing nails and cornea^[5].

Problems in Old age: With old age, strength and agility fade, resistance to disease declines, and autonomic nervous system arousal grows less responsive to situational demands^[6]. Progression of age usually creates multiple problems in human beings. These can be divided in following categories^[7]:

Physical problems: The effects of ageing are usually not enough to interfere with organ function under normal conditions, but reserve capacity is significantly reduced.

- **Cardiovascular:** Reduced exercise intolerance, Widened aortic arch on X-ray, Widened pulse pressure, increased risk of postural hypotension, increased risk of atrial fibrillation
- **CNS:** Increased risk of delirium, muscle weakness and wasting, reduced position and vibration sense, increased risk of falls, Parkinsonism
- **Bones:** Increased risk of Osteoporosis
- **Respiratory System:** Reduced vital capacity and peak expiratory flow, increased residual volume, reduced aspiratory reserve volume, reduced arterial oxygen saturation, increased risk of infection
- **Endocrine System:** Increased risk of glucose tolerance.
- **Renal system:** Impaired fluid balance, increased risk of dehydration/overload, impaired drug metabolism and excretion.
- **Gastrointestinal system:** Constipation, indigestion
- **Ophthalmic:** Cataract and glaucoma
- **Skin :** wrinkles and dryness
- **Genito- urinary:** Prostate enlargement in males
- **Problems of hair:** Hair loss, baldness
- **Hearing:** Reduced hearing or loss of hearing capacity is also very common in old age.
- **Menopause:** Post menopausal syndrome
- **Memory:** Alzheimer’s disease is also common in old age group people.
- Depression and Insomnia

The findings of an ICMR survey conducted in 1984-85 of elderly persons over 60 years of age attending geriatric clinics in rural areas is as shown in Table 1.

Table: 1 Showing percentage of elderly presenting various complaints^[8]

Ailment	Reported percentage
Visual impairment/complaint	88.0
Locomotive disorder, joints, muscles	40.0
Neurological complaints	18.7
Cardiovascular disease	17.4
Respiratory disorder	16.1
Skin conditions	13.3
Gastro-intestinal/abdominal disorder	9.0
Psychiatric problems	8.5
Hearing loss	8.2
Genitourinary disorder	3.5

Apart from above mentioned physical problem, old people also experience psychological problems like dementia and depression etc. Social issues like lack of family support and financial issue are also a major point of concern in geriatric age group.

Comprehensive Geriatric Assessment: Proper history to be taken.

Comprehensive geriatric assessment is the assessment of a patient made by a team which includes a geriatrician, followed by interventions and goal setting agreed with the patient and carers.

This can take place in the community, in assessment areas linked to the emergency department, or in hospital. It covers the following areas:

- Medical diagnoses
- Review of medicines and concordance with drug therapy
- Social circumstances
- Assessment of cognitive function and mood
- Functional ability (i.e., ability to perform activities of daily living^[9]).

Physical assessment^[10]:

- Nutrition : BMI assessment
- Hydration : Skin turgor, oedema
- Erect and supine blood pressure : Postural hypertension
- Hearing : Wax, Hearing aid used
- Vision: Visual acuity, glasses worn, cataract
- Cognitive function: Abbreviated mental test
- Muscle: Wasting, Strength
- Per rectum: Prostate size in male, Faecal impaction, anal tone
- Skin: Wounds/ulcer/infection
- Joints: Deformity, pain, swelling, range of movement
- Gait and balance

Social assessment: Home circumstances: Living alone, with another or in a care home.

Activities of daily living (ADL)

Tasks for which help is needed

Domestic ADL: shopping, cooking, housework

Personal ADL: bathing, dressing, walking

Informal help: relatives, friends, neighbours

Formal social services: home help, meal on wheels

Table: 2 Areas potentially amenable to preventive health care in the elderly^[11]

Primary	Secondary	Tertiary
Health habits -smoking -alcohol abuse -obesity -nutrition -physical activity -sleep Coronary heart disease risk factors Immunization -influenza -pneumovax -tetanus Injury prevention Latrogenesis prevention	Screening for - hypertension -diabetes -periodontal disease - dental caries - sensory impairment - medication side-effects - colo-rectal cancer breast cancer, cervical cancer prostatic cancer - nutritionally-induced anaemias - depression, stress urinary incontinence podiatric problems - fall risk - tuberculosis (high-risk)	-Rehabilitation -physical deficits - cognitive deficits. - functional deficits -Caretaker support -Introduction of support necessary to prevent loss of autonomy

Osteoporosis prevention	- syphilis (high-risk) - stroke prevention - to myocardial infarction	
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Ayurvedic perspective

Ageing means “*Jara*” in Ayurved. *Jara* is defined as “*Jiryate iti jara*” that means that which wears to get old. *Sharir* is also defined as “*Sheeryate anen iti shariram*” means that which is continuously in a process to decay is called *Shareer*. According to Ayurved ageing comes under *Swabhavaj vyadhi*^[12], that which is inherent nature of living being to get old. Ayurved gives special attention to geriatric group of people, that’s why *Jara* is one among the eight branches of Ayurved^[13]. *Acharya Sushrut* further classifies *Jara* into two types- *kalaj* (diseases which occur even after taking utmost care to prevent it).^[14]

Akalaj (diseases which occur due to not following preventive measures).

According to *Acharya Vagbhat*, life cycle of human being is divided into 3 phases-

Bala- From birth upto 16 years. (*Rasadi sapta dhatus, chaksuradi panch indriyas* and *ojo dhatu* develops in this age).

Madhya- From 17 upto 70 years. (*Dhatus, Indriyas* etc., develops and gradually development stops in this age).

Kshaya- After 70 years all the body organs starts decaying and the process continues^[15].

Relation of Dosha and Vayas^[16]: *Balyavastha*: *Kapha* dominant

Madhyamavastha: *Pitta* dominant

Antim avastha: *Vata* dominant

Acharya charak also divides age in three group-

Balavastha- Again divided into two

- 1-16 years (*Kapha* dominance)
- 16-30 (*Ras dhatu* develops and *Manas* is unstable.)

Madhyamavastha- 31-60 years

Jeernavastha- Upto 100 years^[17].

Acharya Sushrut also opines the same about division of *vayas*. *Balyavastha*- Upto 16 years of age.

Madhyamavastha- 16-70 years of age.

Vridhnavastha- After 70 (Wrinkles start, Greying of hairs, hair fall occurs, cough, breathlessness and other complications starts)^[18]

Age stabilizing Dravyas / Rejuvenators^[19]

1. *Giloy* (*Tinospora cordifolia*)
2. *Amrita* (*Terminalia chebula*)
3. *Amlaki* (*Phyllanthus emblica*)
4. *Rasna* (*Pluchea lanceolata*)

5. *Aparajita* (*Clitoria ternatea*)
6. *Jeevanti* (*Leptadenia reticulata*)
7. *Shatavari* (*Asparagus racemosus*)
8. *Mandookparni* (*Centella asiatica*)
9. *Sthira* (*Dasmodium gangeticum*)
10. *Punarnava* (*Boerhavia diffusa*)

Few Evidence based research on Rasayan therapies for Geriatrics

Amlaki: The trial drug *Amlaki rasayan* along with milk has shown highly significant result in treating symptoms like Insomnia, Constipation, Digestive weakness and Hemoglobin percentage. Hence *Amlaki rasayan* is very effective in treating ageing symptoms^[20].

Giloy: Results revealed significant effect of *Guduchi Churna* on lifespan of *D. Melanogaster*. Results clearly indicates that there was 85.91% increase in life span of T group^[21].

Ashwagandha: The findings suggest that high-concentration full-spectrum *Ashwagandha* root extract improves an individual's resistance towards stress and thereby improves self-assessed quality of life. High-concentration full spectrum *Ashwagandha* root extract can be used safely as an adaptogen in adults who are under stress^[22].

Brahmi: Experiments on animals strongly indicate the value of *Brahmi* as a promising agent in AD (Alzheimer's disease) and other forms of cognitive impairment^[23].

Haridra: Here, we reported three cases of the AD whose BPSD were a significantly improved by the turmeric treatment, evaluated by the NPI-Q. The NPI-Q is a brief, reliable, and the clinical rating instrument that evaluates the neuron psychiatric symptoms in demented patients and associated caregiver distress, and the effects of pharmacological treatment on these symptoms and caregivers' distress^[24].

Shilajit: *Shilajit* is a potent and very safe dietary supplement, potentially able to prevent several diseases, but its main medical application now appears to come from its actions in benefit of cognition and potentially as a dietary supplement to prevent Alzheimer's disease^[25].

Gokshur: Overall the *Gokshura* (*Tribulus terrestris* Linn.) is having a significant anti-hypertensive effect both systolic and diastolic without any side effects. Therefore this plant diuretic can be safely recommended for a longer period to the patients of

mild to moderate hypertension mainly associated with fluid retention^[26].

Chyawanprash: The functional exercise capacity, physical, psychological, social and environmental aspects as mentioned in the WHO QOL has been improved with *Chyawanprash*. It can be concluded that *Chyawanprash* is very much effective in improving QOL, functional exercise capacity and other physiological activities in terms of *Ahara shakti* (appetite) and *Vyayama shakti* (exercise) of the apparently healthy elderly participants due to *vayasthapana* (age-stabilizing) property of *chyawanprash*^[27].

Triphala

This article for the first time reports the protective effects of *Triphala* (TE) on Human skin cells *in vitro*. *Triphala* has potential antioxidant property and it acts as a skin-protective ingredient by re-building skin structural proteins and stimulating selective youth genes. The results obtained however, needs further detailed clinical investigation^[28].

Clinical Realities Making Geriatric Research More Difficult^[29]

- Older people are more likely to have comorbid conditions and to be on multiple medications, there is increased tension between selecting subjects who have only the condition of interest (yielding fewer confounding factors) and selecting subjects who will be more representative of typical older adults who have other health problems in addition to the condition under study (yielding results that are more generalizable to the broader population of the elderly).
- Trying to screen, recruit, and formally enroll older subjects may be more complicated because of communication and cognitive problems, such as hearing deficits, strokes, and dementia.
- Several studies, especially population-based studies involving subjects of all ages, suggest that older people have lower participation rates than do younger people. That is, even when eligible and approached for recruitment into a research study, older people are more likely to refuse.
- Once people are enrolled in a study, there is a greater risk of attrition due to illness or death. Taken together, these clinical realities suggest that conducting research using older human subjects is indeed likely to be more time consuming, more expensive, and more difficult.

CONCLUSION

Ageing or old age is an irreversible, unstoppable, inevitable and constant process which can be prevented or delayed by the holistic approach of Ayurved. To achieve this goal one must follow the lifestyle mentioned in Ayurved along with *Rasayan*, *Panchkarma*, dietetics and *Yog* therapies. The process of ageing was described by Ayurvedic *acharyas* in detail and a separate medical branch called *Rasayana Tantra* was developed which described a huge variety of methods and measures to promote health and longevity. Thus, there is a need for research at a large scale in this particular field and campaign must be started to spread awareness about Ayurvedic approach for the welfare of geriatric age group.

A complete holistic and effective package for geriatric care can be prepared keeping in consideration of *Rasayana*, *Panchkarma* therapy dietetics, *Swasthavrtta*, *Sadvrtta*, *Yoga* and spirituality. There is a need to generate awareness among the masses about the consequences of mass ageing and about the strength of Ayurveda's important role in Geriatric health care.

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